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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/912,318	07/26/2001	Yoshihiro Kurii	211786US0	4944

22850 7590 02/06/2003

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER
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UMEZ ERONINI, LYNETTE T

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 02/06/2003

5

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/912,318

Applicant(s)

KURII ET AL.

Examiner

Lynette T. Umez-Eronini

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 10 and 11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-9 drawn to an etchant, classified in class 252, subclass 79.1.
  - II. Claims 10-11, drawn to etching method, classified in class 438, subclass 745.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product as claimed can be used in a materially different process of using that product such as one that one that does not require etching metals such as copper or copper alloys.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

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5. During a telephone conversation with Norman F. Oblon on January 28, 2002 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-9. Affirmation of this election must be made by applicant in replying to this Office action. Claims 10 and 11 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 2, 3, 6, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Ferrier (US 5,869,130).

Ferrier teaches contacting metal (copper and copper alloys) surfaces with an adhesion promoting composition that comprises: an oxidizer, an acid, an corrosion inhibitor, and a source of halide ions and optionally a water soluble polymer (column 4, lines 16-22) and that produces a micro-roughened conversion-coated surface upon the

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metal (column 4, lines 25-27). The oxidizer comprises hydrogen peroxide (column 4, lines 51-60); the acid, sulfuric acid (column 4, lines 61-67); the corrosion inhibitor consisting of tetrazoles (column 5, lines 1-9), which inherently reads on and includes phenyltetrazole, as claimed in the present invention; the source of halide ions may be sodium chloride (column 5, lines 10-14); and water (column 6, line 6). Since Ferrier's composition is composed of the same chemicals that contacts the same materials as those of the claimed invention, then using Ferrier's composition would inherently read on,

an aqueous solution for micro-etching copper or a copper alloy comprising a main ingredient consisting of sulfuric acid and hydrogen peroxide and an assisting ingredient consisting of phenyltetrazole and a chloride ion source, as **in claims 1 and 6**.

Ferrier further teaches:

the concentration of sulfuric acid ranges from 5 to 360 grams per liter (column 4, lines 64-67), which lies within and reads on the concentrations of sulfuric acid being 60-220 g/l, as **in claim 2**;

the concentration of hydrogen peroxide ranges from 6 to 60 grams per liter (column 4, lines 56-60) which lies within and reads on the concentration of hydrogen peroxide being 5-70 g/l, as **in claim 3**; and

the concentration of halide ion may range 5 to 500 milligrams per liter (ppm), which lies within and reads on the concentration of hydrogen peroxide being 1-60 g/l, as **in claim 7**.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ferrier (US '130) as applied to claim 1 above, and further in view of Yasushi et al. (English Abstract of JP 11-021517).

Ferrier differs in failing to disclose the phenyltetrazole is 1-phenyltetrazole or 5-phenyltetrazole, as in **claim 4** and to specify the concentration of the phenyltetrazole is 0.01-0.4 g/l, as in **claim 5**.

Yasushi teaches a microetching agent that consists of at least one of tetrazole and tetrazole derivatives, which has a concentration of 0.0001 to 3-wt % (~0.0001 g/100 ml to 3g/100ml ~ 0.001g/l to 30 g/l). The tetrazole derivatives are preferably 1-phenyltetrazole or 5-phenyltetrazole [SOLUTION]. The aforementioned reads on the phenyltetrazole is 1-phenyltetrazole or 5-phenyltetrazole and has a concentration that falls within the range of 0.01-0.4 g/l as in the present invention.

It is examiner's position that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Ferrier by using a Yasushi's phenyltetrazole for the purpose of roughening a copper surface into a rugged state having excellent adhesion property with a solder resist and the like [Yasushi, PROBLEM TO BE SOLVED].

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11. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ferrier ('130) as applied to claim 1 above, and further in view of Wong (US 4,636,282).

Ferrier differs in failing teach the aqueous solution further comprises a benzene sulfonic acid, as **in claim 8** and to specify the group from which one of the benzene sulfonic acid is selected, as **in claim 9**.

Wong teaches, "An aqueous composition adapted to be mixed with hydrogen peroxide to provide a solution for etching copper, the preparation of said composition comprising mixing . . . phenol sulfonic acid . . ." (claim 11), which reads on the aqueous solution that further comprises a benzene sulfonic acid, which is selected from the group consisting of phenol sulfonic acid.

It is examiner's position that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Ferrier by using a Wong's composition that comprises a benzene sulfonic acid for the purpose of providing a solution whose stability is preserved after repeated use (Wong, column 4, lines 40-42).

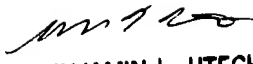
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is 703-306-9074. The examiner is normally unavailable on the First Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on 703-308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are 703-972-9310 for regular communications and 703-972-9311 for After Final communications.

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February 1, 2003



BENJAMIN L. UTECH  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700